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Fisher's Nature of Capital and Income and Rate of Interest), by E. B. Wilson; "Shorter Notices": Hesse-Gundelfinger's Analytische Geometrie der geraden Linie, des Punktes und des Kreises in der Ebene, by E. J. Wilczynski; Gray's Bibliography of the Works of Sir Isaac Newton and White's Scrapbook of Elementary Mathematics, by D. E. Smith; Royal Society Catalogue of Pure Mathematics, by G. A. Miller; Carslaw's Fourier's Series and Integrals, by J. E. Wright; Grimsehl's Angewandte Potentialtheorie in elementarer Behandlung, by E. B. Wilson. "Notes"; "New Publications."

#### BOTANICAL NOTES

##### TWO RECENT PAPERS ON ALGAE

R. E. BUCHANAN'S paper—"Notes on the Algae of Iowa"—in the *Proceedings of the Iowa Academy of Science*, Vol. XIV., opens with a historical account of the study of the Iowa algae, in which eight previous papers are noted extending over a period of twenty-eight years from 1880 to the present. The 181 species credited to the state are arranged mainly according to the system given in West's "British Freshwater Algae," and for each particular localities are given with the name of the collector, and often the date of the collection.

Of the *Myxophyceae* there are 45 species enumerated, of *Bacillariaceae* 5; *Heterokontae* 4; *Chlorophyceae* 127. No *Phaeophyceae*, nor *Rhodophyceae*, are known to occur in the state. This paper is to be considered as a preliminary report, for when the whole of the material collected by the author is worked over it is confidently predicted that many more species will be added to the algal flora of the state.

Somewhat like the foregoing is Conn and Webster's "Preliminary Report on the Algae of the Fresh Waters of Connecticut," published as Bulletin 10 of the State Geological and Natural History Survey. The authors say of it that "it is thought that it will be found to contain most of the common algae of the state." It, also, is based upon West's system, but no attempt is made to distinguish anything lower than the genera, the species

merely being enumerated, usually without localities being given. A somewhat hasty count of species gives for *Myxophyceae* 55 species; *Heterokontae*, 3; *Chlorophyceae*, 223; and *Rhodophyceae*, 10. Comparing these with the Iowa algae we find that the species of *Oscillatoria* are the same in number (9) in the two lists, that Iowa has 12 species of *Oedogonium*, to 2 in Connecticut; so of *Cladophora* the corresponding numbers are 7 for Iowa and 2 for Connecticut; *Vaucheria*, 7 and 3; *Zygnema*, 4 and 5; *Spirogyra*, 25 and 20. In these genera the preponderance is greatly in favor of Iowa, but when we take up the desmids (*Desmidiaceae*) it is quite the opposite, standing 26 for Iowa, to 109 for Connecticut. Forty-four well-drawn plates add greatly to the usefulness of the Connecticut report.

##### PAPERS ON FUNGI

THE quite extended paper (86 pages, and 9 plates) by George R. Lyman on "Culture Studies on Polymorphism of Hymenomycetes" (*Proc. Boston Society of Natural History*, vol. 23, No. 4, pp. 124-209) records the results of careful cultural studies, especially of woody and encrusting species. Besides the normal basidiospores formed by these fungi there are four others which may be regarded as secondary, viz., (a) chlamydospores; (b) oidia; (c) budding cells; (d) conidia. The author concludes that "a considerable majority of Hymenomycetes possess no secondary spores; that oidia are common among the *Agaricaceae* and *Polyporaceae*, and are confined to these two families; that chlamydospores occasionally occur in connection with the basidio-fructification, as in *Nyctalis*, *Ptychogaster*, and *Fistulina*, and are quite widely distributed on the mycelia of all families; and that conidia and other highly specialized secondary methods of reproduction are rare, and occur more frequently in the *Thelephoraceae* than in the higher families."

Professor Olive's paper on "Sexual Cell Fusions and Vegetative Nuclear Divisions in the Rusts" (*Ann. Bot.*, Vol. XXII., pp. 331-360) explains to a certain extent some of the discordant results of Blackman's and Christ-

man's earlier investigations. He concludes that the conjugations by means of which the cells of the rusts change from a uninucleated to a binucleated condition are not to be regarded as simple fusions for nutritive purposes as is common in many fungi, but as marking the beginning of the sporophyte generation.

In a paper entitled "Infection Experiments with *Erysiphe cichoracearum*" (*Bull. Univ. Wis.*, Science Series, vol. 3, pp. 337-416) Dr. G. M. Reed takes up the question of "physiological species," and after making a great many infections concludes that his work "throws considerable doubt upon the existence of distinct biological forms" in mildews as well as in certain species of rust. The paper is so largely made up of tables that it can not be summarized.

C. H. Kauffman's "Unreported Michigan Fungi for 1907, with an Outline of the Gasteromycetes of the State" (in Tenth Ann. Report Mich. Academy of Science, pp. 63-84) adds many hitherto unreported species to the Michigan flora and includes a useful arrangement of the Gasteromycetes. The same author's paper on the Physiology of the Saprolegniaceae (in *Ann. Bot.*, Vol. XXII., pp. 361-387) adds to our knowledge of the structure and development of these interesting fungi, and is especially valuable as suggesting methods of culture. The author modestly says that his paper "adds something more of evidence towards the doctrine that sex in plants is determinable by external conditions," distinctly disclaiming however that it is yet conclusive.

#### CONNECTICUT MOSSWORKS

UNDER the title "The Bryophytes of Connecticut" Professor Doctor Evans and Mr. G. E. Nichols publish (in *State Geol. and Nat. Survey, Bull.*, No. 11) an important contribution to our knowledge of the mosses and liverworts of that state. It opens with a well-written introductory chapter of 16 pages on the general structure of these plants, followed by a 5-page history of bryology in Connecticut (from which we learn that the first systematic work on these plants was undertaken by D. C. Eaton about half a century ago), half a dozen

pages of ecology, and two, on the economic values of bryophytes. Then follows the Catalogue of 387 species, distributed as follows: *Marchantiales*, 12; *Jungermanniales*, 92; *Anthocerotales*, 3; *Sphagnales*, 31; *Andreaeales*, 2; *Bryales*, 247. Under each species are given habitat, localities in the state, general distribution, exsiccata and references to descriptive or other papers. The bibliography includes 81 papers, beginning with Sullivant's "Anophytes" in the second edition of Gray's "Manual," in 1856, and coming down to the present. An excellent index closes this useful work.

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#### ANTHROPOLOGY AT THE BRITISH ASSOCIATION

THE Anthropological Section (H) of the British Association, held at Belfast last September, was notable for the number and excellence of the papers, many of which were fully illustrated with lantern slides. A précis of the proceedings will be found in *Nature*, but readers of SCIENCE may like to hear how America was represented. In his presidential address on "Totemism" Mr. A. C. Haddon criticized the terminology employed by most American students. He held a confusion had been made between totemism proper and the cult of a guardian spirit; doubtless American anthropologists will have something to say on this subject. Mr. W. J. Knowles, a local archeologist, described some stone axe factories that he had discovered near Cushendall in Co. Antrim, which recall in a small way, as was pointed out at the time, the bowlder quarries described by Dr. W. H. Holmes in the Fifteenth Annual Report of the Bureau of Ethnology. Mr. Knowles also exhibited some leaf-shaped flint objects which were probably an intermediate stage in the manufacture of arrow- and spear-heads and he alluded to the analogous leaf-shaped blades found by Mr. Holmes in the Piny branch quarry sites. Dr. W. H. Furness, third, of Philadelphia, read a very interesting and important paper on the "Ethnography of the Nagas of Eastern Assam," which was illustrated by a fine series